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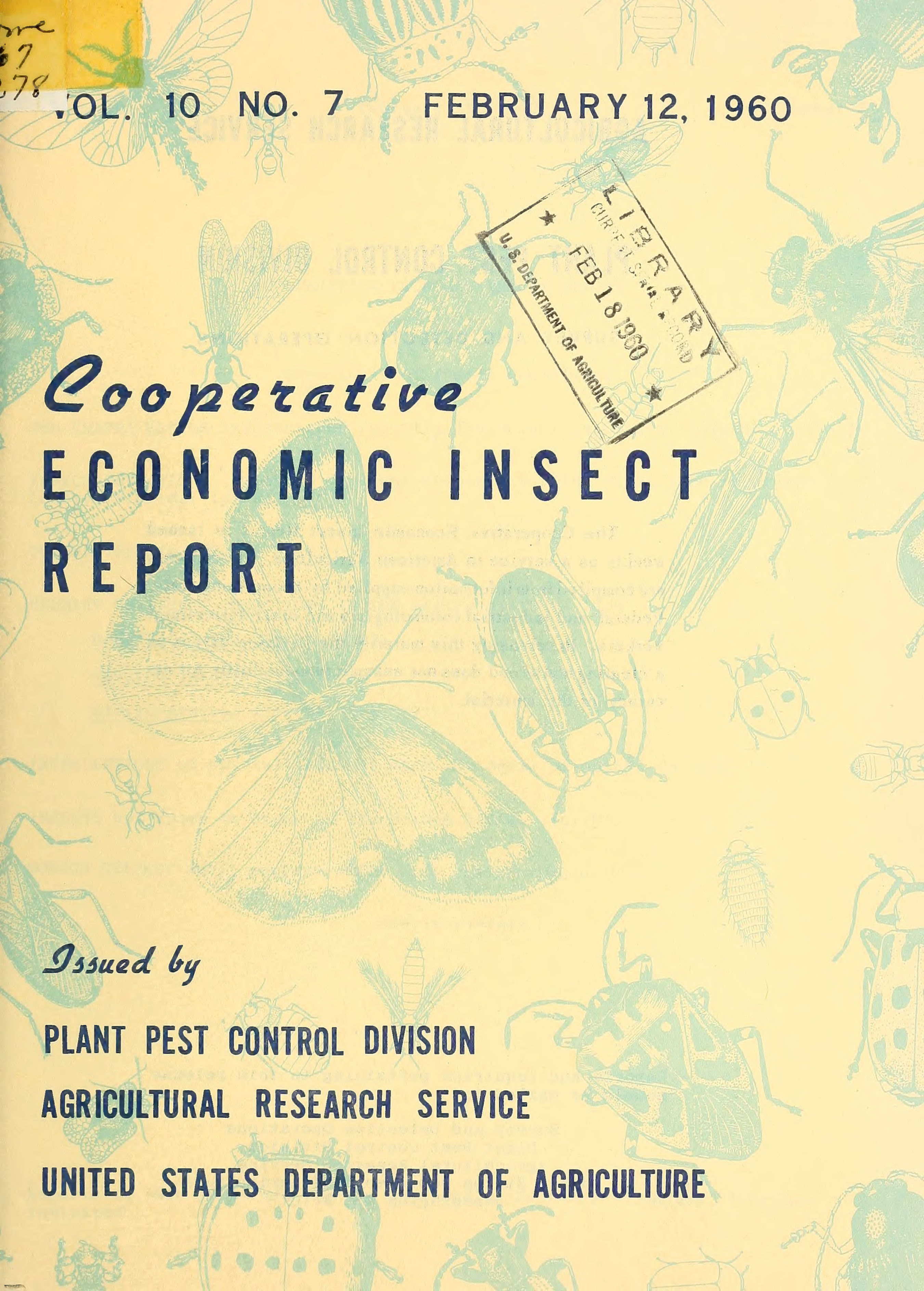

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Control Division
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Volume 10 February 12, 1960 Number 7

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

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MORMON CRICKET adult survey - fall 1959. (following p. 91).

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Reports in this issue are for the week ending February 5, unless otherwise indicated.

WEATHER OF THE WEEK ENDING FEBRUARY 8

Above-normal temperatures again covered most of the Nation this week, with unusually mild weather for February in the northern Great Plains, where weekly averages were as much as 18° above normal. Generally above-normal readings were reported in all other sections, except in portions of the Southern States and the southern Plateau area, where temperatures were near or slightly below normal. Freezing temperatures extended southward along the Cascades and Sieras into Arizona, and from southwestern Texas eastward to South Carolina and Georgia. Below-zero readings were confined to northern New England and New York, the extreme northern Great Plains, and scattered mountain areas of the Far West.

Along the West Coast, three general storms were experienced during the week. Warm, moisture-laden air brought over 1 inch of rainfall from southern California and northern Nevada northward to Washington. Weekly totals of 3 to 4 inches were recorded in coastal sections of Oregon and northern California, and similar totals occurred as rain at elevations below 6,500 feet in the mountains of northern California.

Moderate to heavy precipitation fell in the southern Rocky Mountains, the central and southern Great Plains, the lower Mississippi Valley, the Ohio Valley, and in the Southeastern States. A large low pressure area moved from the central Rocky Mountains southeastward to northern Texas, and thence northeastward to the St. Lawrence Valley during the week. Snowfall extended from western South Dakota to eastern New Mexico and northwestern Oklahoma, and high winds in southeastern Colorado, the Texas Panhandle, and Oklahoma caused heavy drifting, closing roads in several areas. Squall line activity with locally severe thunderstorms extended from western Texas to the central Gulf coast.

Precipitation totals of over 2 inches were reported from northwestern Oklahoma, scattered areas of Tennessee, Louisiana, Mississippi, Alabama, Georgia and Florida. Areas of excessive soil moisture continue in most of the Southeast. Above-freezing temperatures and only light to moderate precipitation in most Northern States resulted in a generally reduced snow cover. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - ARKANSAS - Warmer weather has resulted in a slight increase in populations. Both nymphs and adults were observed in Washington and Benton Counties. Counts ranged 3-15 and averaged 9 per linear foot. (Boyer). OKLAHOMA - Populations declined considerably during last few weeks in infested fields in Payne, Logan and Kingfisher Counties. (Wood). Counts averaged 3 and 6 per linear foot in 2 wheat fields in Hennessey area, and none were noted in limited survey in Beckham and Roger Mills Counties. (VanCleave et al.). Counts averaged 4 per linear foot in wheat field in Washita County, but none were noted in 5 other fields checked in Washita and Caddo Counties. (Hudson). Counts averaged 3 per linear foot in wheat field in Grandfield area, and none were noted in 3 other fields checked in Tillman County. (Hatfield). Counts averaged 25 per linear foot in wheat field in Atoka County (Vinson) and averaged 36 per square foot in field of volunteer oats and vetch in Choctaw County (Goin).

ENGLISH GRAIN APHID (Macrosiphum granarium) - OKLAHOMA - Counts averaged 10 per linear foot in wheat field in Atoka County, and none were noted in fields of small grain checked in southeast, southwest, west central and central areas. (VanCleave et al.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Counts averaged 2 per linear foot in wheat field in Atoka County (Vinson) and averaged 0.5 and 3 per linear foot in 2 wheat fields checked in Hennessey area (Owens). None noted in other fields checked in southeast, southwest and west central areas. (VanCleave et al.).

PEA APHID (Macrosiphum pisi) - ARIZONA - Infestations continue to increase slightly in Yuma County alfalfa. Counts averaged 15-25 per 10 sweeps in some fields. Infestations lighter in other areas of the State. (Ariz. Coop. Sur.). OKLAHOMA - Counts averaged 0 and 5 per linear foot in 2 alfalfa fields checked in Kingfisher-Garfield County area (Owen) and averaged 20 per square foot in field of alfalfa and rye in Elk City area. None noted in other alfalfa fields checked in Beckham, Roger Mills and Custer Counties. (VanCleave et al.). Counts averaged 4 per square foot in field of alfalfa in Johnson County (Vinson) and averaged 4, 6 and 7 per square foot in 3 alfalfa fields checked in Choctaw County (Goin).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Counts averaged 0 and 20 per linear foot in 2 fields of alfalfa checked in Kingfisher-Garfield area (Owen) and averaged 5-30 per square foot in alfalfa fields checked in Beckham, Roger Mills and Custer Counties. Numbers declined considerably during past few weeks in this area. (VanCleave et al.). Counts averaged 15 per square foot in alfalfa field in Johnson County (Vinson) and averaged 0.1, 0.5 and 0.5 per square foot in 3 alfalfa fields, respectively, in Choctaw County (Goin).

SOYBEAN CYST NEMATODE (Heterodera glycines) - ARKANSAS - Three new infestations recently found in southeastern corner of Craighead County. (Ark. Ins. Rpt.).

FRUIT INSECTS

SHOT-HOLE BORER (Scolytus rugulosus) - CALIFORNIA - Heavy larval populations in apple twigs in Escondido, San Diego County. (Cal. Coop. Rpt.).

CITRUS FLAT MITE (Brevipalpus lewisi) - CALIFORNIA - Light populations found on walnut in the Walnut Creek area for the first time. (E. A. Michelbacher).

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - FLORIDA - A compilation of interceptions at Florida ports shows that since July 1, 1947, this pest has been intercepted there 27 times. Eleven of these interceptions were made in the last 18 months. Twelve of the interceptions were from material originating in Brazil, 5 in Spain, 4 in Portugal and one each in material from Argentina, Costa Rica, Israel and Italy. In addition, this pest has been intercepted many times at other ports in material destined to Florida. (Plant Quarantine Division, November 30, 1959).

Citrus Insect Situation in Florida - First of February - PURPLE SCALE (Lepidosaphes beckii) activity fluctuated in the low range and will remain low through February in all districts. FLORIDA RED SCALE (Chrysomphalus aonidum) activity during February will change very little, but an upward trend will start in early March. Populations are presently below average with none of the surveyed groves showing heavy infestations. Activity is highest in Gainesville, Bartow and upper east coast districts. CITRUS RED MITE (Panonychus citri) activity increased and will continue upward through February. Although very few heavy infestations exist at present, light infestations are common and will build up rapidly during the next six weeks. Highest activity is in Bartow, Indian River and Brooksville districts. CITRUS RUST MITE (Phyllocoptruta oleivora) activity sharply increased and populations are expected to be much higher than usual during the next two months. Infestations on leaves will decrease in March but mites will be above average abundance on fruit until April. Highest activity is in west coast, Bartow, Indian River, upper east coast and Ridge districts. TEXAS CITRUS MITE (Eutetranychus banksi) is present in 20 percent of the groves checked. Populations are expected to increase during February. (Simanton, Thompson, Johnson (Citrus Experiment Station, Lake Alfred)).

TRUCK CROP INSECTS

A SPIDER MITE (Tetranychus cinnabarinus) - ARIZONA - Found occasionally on lettuce in Yuma County. (Ariz. Coop. Sur.).

A CABBAGE ROOT APHID - TEXAS - Several severe infestations of an undetermined species were reported in the lower Rio Grande Valley area. (Deer).

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - Slight increases were noted in the lower Rio Grande Valley. (Deer).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Sticky-board collections during the period January 25-February 1 were 4 at Mesa, 11 at Kyrene, 3 at Waddell, 11 at Glendale and 3 at Deer Valley. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A FLATHEADED BORER (Anthaxia aeneogaster) - CALIFORNIA - Light populations recorded on native black walnut in Thousand Oaks, Ventura County. (Cal. Coop. Rpt.).

A SPIDER MITE (Oligonychus ununguis) - ARIZONA - Attacking arborvitae in central area. (Ariz. Coop. Sur.).

A BEETLE (Conotelus mexicanus) - CALIFORNIA - Adults are heavy on narcissus blooms in Los Angeles, Los Angeles County. (Cal. Coop. Rpt.).

MELON APHID (Aphis gossypii) - CALIFORNIA - Heavy populations occurring on Pittosporum tobira in Oceanside, San Diego County. (Cal. Coop. Rpt.).

A SOFT SCALE (Coccus sp.) - VIRGINIA - Severely damaging begonia plants at Bowling Green on January 4. (Egar, Amos).

A SCALE INSECT (*Leucaspis japonica*) - MARYLAND - Infesting boxwood at Gibson Island, Anne Arundel County. Det. by J. A. Davidson. (U. Md., Ent. Dept., Jan.4).

AN APHID (*Aphis coreopsidis*) - MARYLAND - Infesting cosmos at University Park, Prince Georges County. Collected September 18, 1959, and determined by M. Leonard on January 24, 1960. This is the first published record received of this species in the State. (U. Md., Ent. Dept.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (*Hypoderma* spp.) - UTAH - Common on February 1 in backs of some herds of cattle in Davis County, especially in some younger animals. (Knowlton). MARYLAND - Ranged 1-15 per beef animal at Flintstone, Allegany County. (U. Md., Ent. Dept., Feb. 1). TENNESSEE - Counts of *H. lineatum* showed 9 percent infestation of mature cows checked at an elevation of 2000 feet in Cumberland County. Approximately 25 percent of the mature cows checked in Anderson County were infested with an average of 3 larvae per cow. This was at an elevation of 1000 feet. (Stanley). OKLAHOMA - Counts of *H. lineatum* averaged 16 per animal on 75 head of beef cows checked in Latimer County. (Goin).

CATTLE LICE - OKLAHOMA - Heavy on approximately 60 percent of 75 beef cows checked in Latimer County. (Goin).

A LOUSE FLY - NORTH CAROLINA - Averaged at least one per grouse that was killed in Alleghany County this winter. Species probably *Lynchia americana*. (Black, Farrier).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (*Trogoderma granarium*) - ARIZONA - Ten properties have recently been found infested at Yuma, Yuma County. Volume of 6 of the properties is estimated at 1,330,000 cubic feet. (Ariz. Coop. Sur.). NORTH CAROLINA - Larvae intercepted at Wilmington in bags of nuts from India. (Sessions, Wray).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (*Hippodamia convergens*) - ARKANSAS - Only an occasional specimen observed. (Boyer). OKLAHOMA - Counts averaged 0.1-1 per square foot in alfalfa fields in Beckham, Roger Mills and Custer Counties. (VanCleave et al.). Counts averaged 0.05 per square foot in alfalfa field in Johnson County (Vinson), and none were noted in other fields of alfalfa and small grains checked in southeast, southwest, west central and central areas (Goin et al.).

NABIDS (*Nabis* spp.) - ARKANSAS - Only an occasional specimen observed. (Boyer).

HYMENOPTEROUS PARASITES - ARKANSAS - Beginning to appear on warm days. Aphid parasitism is very low at present, however. (Boyer). OKLAHOMA - Counts averaged 0.01 per linear foot in a wheat field checked in Atoka County. (Vinson).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - ARKANSAS - Infestations recently found at 4 points outside the treated area in Union County. Delimiting surveys underway. (Ark. Ins. Rpt.). FLORIDA - Reported in Orange County for the first time in January. (Fla. Coop. Sur.).

A WHITEFLY (*Trialeurodes abutilonea*) - ARIZONA - Specimens collected on wild tobacco, *Nicotiana trigonophylla*, in Yuma County. (Ariz. Coop. Sur.).

A CHIRONOMID (*Tendipes nervosus*) - MARYLAND - Apparent in a water distribution system at Baltimore. (U. Md., Ent. Dept., Jan. 28).

CORRECTIONS

CEIR 10(5):58, 59 - OLIVE FLY (Dacus oleae) should read OLIVE *FRUIT* FLY (Dacus oleae).

DISTRIBUTION MAPS - In the special compilation of "Distribution Maps" that was issued in December 1959, the record for Laramie County, Wyoming, was omitted from hessian fly (*Phytophaga destructor*) map on page 17 of this compilation. Add this county which is in the lower right corner of Wyoming.

LIGHT TRAP COLLECTIONS

	Pseudaletia unipuncta	Feltia subterr.	Prodenia ornithog.	Agrotis* ipsilon	Heliothis zea
ARIZONA					
Mesa 1/25-31			43		
FLORIDA					
Monticello 2/2	1	3			
Quincy 2/1	2	1			
LOUISIANA					
Baton Rouge 1/29-2/4	1		1	1	1
Franklin 1/22-28		1	3	1	
Franklin 1/29-2/4		1		1	
SOUTH CAROLINA					
Clemson 1/30-2/5				1	
Charleston 2/1-7	4		2	4	

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*Note: Agrotis ypsilon (Rott.) has been changed to Agrotis *ipsilon* (*Hufn*.). See Zimmerman, E. C. 1958 Insects of Hawaii, Vol. 7:253.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES [1]

1959

Introduction - The summary of insect conditions that follows in this and several succeeding issues of the Cooperative Economic Insect Report was compiled in Survey and Detection Operations from annual summaries that were submitted by cooperating states. A list of individuals and cooperating agencies responsible for the greater part of the information in this summary will appear after the concluding section of the summary. The summary will be published in a similar manner to that which is used in the weekly issues of the CEIR. However, because of various difficulties, the lesser sections, i.e. Beneficial Insects, Tobacco Insects, Stored-product Insects, etc., will be carried first. In addition, the "Status Report on Forest Insect Conditions in the United States - 1959", which is compiled by Forest Insect Research, U. S. Forest Service, will be reissued in the CEIR after its release by the Forest Service. Since this forest summary is based largely on forest insect conditions, notes on ornamental and shade tree insects are not included or only briefly mentioned. This being the case, special notes covering those insects of ornamental plants and shade trees, as submitted by the various states, will be included in the CEIR summary under a special section. Also, any forest insect conditions not covered in the Forest Service report will be included in an additional special section.

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BENEFICIAL INSECTS

LADY BEETLES were of considerable importance in controlling aphids in Nevada, Washington, New Mexico, Arizona and Idaho during 1959. CONVERGENT LADY BEETLE (Hippodamia convergens) was the primary species in Arizona and Washington. In Arizona, lady beetles were heavy in corn leaf aphid infestations during late March and April and were also heavy in alfalfa during these same months and light to medium the rest of the year. High populations were present in grain sorghum in October and November in Arizona. The heavy populations, which built up on pea aphid during the winter months in New Mexico, were a major factor in preventing a buildup of spotted alfalfa aphid in southern Dona Ana County. In southwestern Idaho, populations of various species in alfalfa fields severely infested with pea aphid were extremely large. Up to 15 pupae were found on 6-inch alfalfa stems during June. Over 100 per square yard were found in some fields in southwestern Idaho. Elsewhere in Idaho, populations were more nearly normal. Low temperature and rain affected lady beetle activity in Nebraska during the spring and early summer. Populations increased during the remaining summer months in southeastern and south central Nebraska. The highest count recorded averaged 24 larvae and adults per 100 sweeps. Most counts, however, ranged from 4-15 per 100 sweeps. Lady beetles were also important in Louisiana.

Convergent lady beetle was the most abundant species in Nebraska. Populations of convergent lady beetle were common in a variety of crops throughout Oklahoma during most of the year. Temperatures during the spring slowed down the activity of this species and allowed aphids to build up in alfalfa and small grains over most of that State. Heavy populations of convergent lady beetle were reported in scattered alfalfa fields in Oklahoma during the summer months. Counts were generally light during the fall and early winter months. Several species of lady beetles were relatively scarce in clover and alfalfa fields during 1959 in Illinois. With the exception of the week ending May 13, adults never exceeded 80 per 100 sweeps and larvae never exceeded 65 per 100 sweeps, except for the weeks ending June 10 and July 15. However, adults and larvae were very abundant in some fields of small grain and corn in Illinois that were heavily infested with aphids. In Delaware, adults of Coleomegilla maculata were abundant on alfalfa and clover throughout the State during early May.

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[1] Including all reporting states except Hawaii and Alaska, which were carried in CEIR 10(4):46 and CEIR 10(6):74, respectively.

Adults of a COCCINELLID (Chilocorus cacti) were very numerous and feeding on a poplar phylloxera at Rosewell, Chaves County, New Mexico.

LACEWINGS were much more plentiful in alfalfa fields that were severely infested by pea aphid in southwestern Idaho than in 1958, but numbers were about normal in other areas of the State. Varying numbers were found throughout Oklahoma after early March, with only light to medium populations being reported and, in general, lacewings were not abundant in Nebraska, the average being about 4 per 10 sweeps. GOLDEN-EYE LACEWING (Chrysopa oculata) adults ranged 0-60 per 100 sweeps and larvae 0-100 per 100 sweeps in clover and alfalfa in Illinois. The first larvae appeared in fields the first week of May, being rather abundant in some small grain and corn fields that were heavily infested by aphids. Adults and larvae of golden-eye lacewing were numerous throughout Delaware most of the season.

SYRPHIDS were common in alfalfa and clover fields throughout Idaho during the summer and larvae were more abundant than usual in Nevada. In Illinois, syrphid larvae were very scarce in clover and alfalfa during 1959; 20 per 100 sweeps being the greatest number found in any one field. Fair numbers were found in some Illinois corn fields which were heavily infested by aphids, but they were scarce in small grain fields even though aphids were abundant. Syrphids were extremely abundant in sweet corn fields in the central area and on the Eastern Shore of Maryland; Mesogramma polita being identified from Baltimore County.

FLOWER BUGS (Orius spp.) were common in alfalfa and other crops in Arizona and were effective predators in cotton fields in Nevada, but were less numerous than in past years in Nebraska. The most activity was noted in alfalfa in Nebraska, with small numbers attacking aphids in corn. Counts ranged 2-20 per 10 sweeps in that State.

DAMSEL BUGS (Nabis spp.) were common in alfalfa and other crops in Arizona, effective predators in cotton in Nevada, and active in alfalfa near Shoshone, Idaho, by early April. During May in Idaho, populations were generally below those of the last few years, but numbers increased to near normal levels by mid-summer. Damsel bugs were probably the second most common predator reported during 1959 in Oklahoma, being common in alfalfa throughout the year and common in fields of small grain during the spring. In Nebraska, near normal numbers were detected throughout 1959; average counts ranging 3-6 per 10 sweeps. Numbers in Illinois ranged 0-80 per 100 sweeps in clover and alfalfa from April to mid-June and increased from then on, with as many as 600 per 100 sweeps being found in early August.

BIG-EYED BUGS (Geocoris spp.) were common in alfalfa and other crops in Arizona, numerous in cotton in Louisiana and appeared to be about average in Idaho. ASSASSIN BUGS were effective predators of cotton insects in Nevada.

An extensive survey of PREDATORS in cotton fields in Arkansas was conducted in 1959, with a total of 172 species representing 32 families and 7 orders, being identified by December 31.

HYMENOPTEROUS PARASITES were of very little value in controlling greenbug and other aphids in fields of small grain in Oklahoma during 1959 because of low temperatures, generally; but the three introduced SPOTTED ALFALFA APHID PARASITES (Trioxys utilis, Aphelinus semiflavus, Praon palitans) were present in variable numbers during the spring and summer in Arizona and assisted in reducing infestations of spotted alfalfa aphid in west and central areas of Nevada. Populations were highest during the spring and very low in July and later months in Arizona. P. palitans has become well established in Nevada and aided in control of spotted alfalfa aphid, but was much lighter than in 1958 in New Mexico. Parasitized aphids were quite abundant in alfalfa fields in Chaves and Eddy Counties, New Mexico, during September, however.

A CHALCID (*Brachymeria* n. sp.) was collected from an oleuthreutid moth (*Anchylopera platanana*) at Gainesville, Florida, during August. Specimens of this same parasite had been collected from this host at Blacksburg, Virginia, in 1950. The first clover aphid mummy was found in Washington in a red clover field in Columbia Basin on June 9. The parasite was identified as *Aphelinus lapisligni* and was credited as aiding in the control of clover aphid by the end of June.

A BRACONID (*Apanteles galleriae*) wiped out the wax moth population in one beeyard in Polk County, North Carolina, during 1958. This was the first record of this parasite in North America. The determination and report were made in 1959.

A EUROPEAN CORN BORER PARASITE (*Lydella grisescens*) was found in numbers for the first time during 1959 in Nebraska. Previously, only occasional specimens were collected. In Delaware, 3,400 adults of this parasite were released in several areas of the State in an attempt to recolonize this species in the field.
A CICADA KILLER (*Sphecius speciosus*) was fairly common in New Castle County.

MELYRIDS (*Collops* spp.) were common in alfalfa and other crops in Arizona and were effective predators in cotton fields in Nevada. CLERID adults were higher in number than in past few years in Valley County, Idaho; *Enoclerus sphegeus* and *Thanasimus undulatus* were common.

In Idaho, adults of a BUPRESTID (*Agrilus hyperici*) began to appear at release sites in klamathweed stands north of Coeur d' Alene during mid-July and a KLAMATHWEED BEETLE (*Chrysolina gemellata*) began emerging during the first week of May in the lower Clearwater River drainage area. By mid-May, adults of *C. gemellata* were very abundant and severely defoliated host plants in that area. Propagation of a GORSE WEEVIL (*Apion ulicis*) in Oregon looked more favorable in 1959, with the population at one release site in Coos County at least four times that of 1958. The total area of habitation of this species now covers about one and one-half square miles. One new release site in Lane County, Oregon, was established, with about 1,600 weevils released, and new release sites were also established in Curry County.

ALKALI BEE (*Nomia melanderi*) emergence was first reported on June 9 in Homedale area of Idaho, began June 13 in Nyssa-Adrian area of Oregon and reached peak during mid-July in Washington. Cool temperatures held the emergence date back in Oregon. The peak emergence date in Washington was timed well with haycutting so that bee activity and alfalfa bloom coincided, resulting in good seed yields. Populations in Pershing County, Nevada, decreased in 1959, but slightly increased in Humboldt County. They were observed pollinating alfalfa in Nye County, Nevada, for the first time. The extensive chemical controls of pea aphid that were applied in southwestern Idaho greatly reduced alkali bee populations in that area. In Oregon the adult population declined sharply about July 25, and by August 25 had reduced to a small fraction of the peak population in the Nyssa-Adrian area.

HONEY BEE (*Apis mellifera*) - Honey yield was slightly better than average in Kansas and production was estimated at 4,100,000 pounds in Washington, a 10 percent increase over the 1947-56 average. In Georgia, excessive and untimely rains prevented beekeepers from making a good honey crop. The spring crop was a failure in many areas of the State and very little sourwood honey was produced for the same reason. Honey bee did not winter well in 1958-59 in Georgia, primarily because of lack of stores. Demand for package bees and queens from Georgia producers was up, but production was off due to rains. In Washington, pollination of tree fruits and legume seeds was disrupted by cool, windy weather. The main bee poisoning problem encountered in Washington was when first cover, long-residual sprays were applied to fruit trees in the Yakima Valley during a critical foraging time for the bees. Bees may have been killed because of flying several miles to visit limited cover crop blooms. Honey bee losses were the greatest in at least 10 years in the Yakima Valley. In Rhode Island, swarms were few and negligible, with many cases of winter-killed bees being observed in the spring.

Inspection of aparies showed the incidence of American foulbrood to be 0.88 percent in Kansas (a decrease of 1.57 percent), up somewhat in Georgia and present in 350 colonies of 12,186 inspected in Oregon. European foulbrood was not serious in Georgia and was present in 84 of 12,186 colonies inspected in Oregon.

TOBACCO INSECTS

HORNWORM populations (Protoparce spp.) were variable, depending on the area. In Virginia, hornworms were one of the major pests of tobacco, but properly timed and adequate treatments prevented heavy damage, except in a few isolated fields. Infestations on tobacco in Georgia were very light and scattered, and broods in Maryland were about normal in all sections. Light trap records in Indiana indicated that moths of TOBACCO HORNWORM (Protoparce sexta) were considerably more abundant than in 1958 in Tippecanoe County, but were less abundant than in 1958 in Lawrence County. Two generations of tobacco hornworm were reported in Tippecanoe, Lawrence and Jefferson Counties, Indiana, with damage to tobacco being about the same in 1959 as in 1958 in Jefferson County; however, the first-generation injury was more severe in this county in 1959 due to the plants being small at the time of infestation and many growers whose fields were not protected had to apply treatments once or twice during the season. Moths of TOMATO HORNWORM (Protoparce quinquemaculata) were more abundant in 1959 than in 1958 in Tippecanoe and Lawrence Counties, Indiana, with the second generation being about the same as in 1958 and 1957 in Lawrence County. Very few tomato hornworms were found on tobacco in Jefferson County, Indiana, during 1959.

Tobacco fields in North Carolina were examined to determine foliar loss by HORNWORMS (Protoparce spp.) and BUDWORMS (Heliothis spp.). Based on variances of the 1958 data, the optimum number of plants examined for foliar loss was 80 plants following the first brood and 40 following the second brood. Foliage loss in 1959 was nearly one-fifth the loss of 1958, averaging 1.12 dollars per acre of flue-cured tobacco. The number of fields which were uninjured, as found in the survey of 155 fields following the first brood of hornworms and 223 following the second brood, increased from less than one to eight times those in 1958.

Tobacco Fields Sampled Where No Foliage Injury Occurred

	Brood	1958	1959
Hornworms	First	55 percent	64 percent
	Second	25 "	74 "
Budworms	Early	16 "	34 "
	Late	34 "	80 "
Both Hornworms and Budworms	Early	14 "	32 "
	Late	5 "	43 "

TOBACCO BUDWORM (Heliothis virescens) infestations were light to moderate at the time tobacco was in bloom in Georgia, being usually serious at that time of the year. In Maryland, infestations were more than normally abundant on tobacco in St. Marys County. TOMATO FRUITWORM (Heliothis zea) caused light to medium damage to tobacco in Virginia, the damage being about normal. A general outbreak of tomato fruitworm occurred in Calvert and St. Marys Counties, Maryland, about harvest time. The infestations were generally too late to require treatments.

CUTWORMS caused some damage to tobacco in Georgia, but were not a serious problem, while in Wisconsin, cutworms caused considerable damage to tobacco in both the northern and southern areas. CABBAGE LOOPER (Trichoplusia ni) infestations were few and light in Georgia and YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) and POTATO TUBERWORM (Gnorimoschema operculella) larvae were found infesting tobacco at West Palm Beach, Florida.

SOUTHERN GREEN STINK BUG (Nezara viridula) and BROWN STINK BUG (Euschistus servus) infestations on tobacco were very light in Georgia compared with those of 1957-58. Only a few complaints were received concerning difficulty in control. GRASSHOPPERS caused some damage to tobacco in Georgia, but were not a serious problem.

Infestations of GREEN PEACH APHID (Myzus persicae) were generally light throughout Georgia, but this species was one of the major pests of tobacco in Virginia. However, properly timed and adequate controls prevented heavy damage in Virginia, except for a few instances. In Maryland, infestations during July and August necessitated the treatment of over 3,000 acres by aircraft.

WIREWORMS were one of the major pests of tobacco in Virginia, but heavy damage was prevented except in a few isolated instances by controls. Infestations of Conoderus sp., probably vespertinus, were limited to the southern half of the Coastal Plain in North Carolina. The highest infestations of newly set tobacco plants were over 50 percent in untreated North Carolina fields. A WHITE-FRINGED BEETLE (Graphognathus sp.) caused moderate damage to one field of tobacco in Irwin County, Georgia.

VEGETABLE WEEVIL (Listroderes costirostris obliquus) infestations were light to moderate in tobacco plant beds in Georgia and larvae and adults were common in plant beds in Maryland during May. In North Carolina, up to 25 adults per plant were present at night in a tobacco field in Sampson County in early May.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) was destructive to newly set tobacco plants in all sections of Maryland and were more than normally abundant on the crop during August. In Virginia, this pest was one of the major pests of tobacco, but controls prevented heavy damage, generally. Infestations of tobacco flea beetle in Georgia were light to moderate, occurring in plant beds and in the field, but infestations were of no economic importance in Indiana.

STORED-PRODUCT INSECTS

KHAPRA BEETLE (Trogoderma granarium) surveys continued during 1959 in all areas of the United States. Since the beginning of the eradication program, infestations have been found on 227 properties in Arizona, 993 properties in California, 19 in New Mexico and 22 in Texas. As of December 31, 1959, all properties had been treated, with the exception of 3 in Arizona and 4 in California. Negative surveys were made on 637 properties in Oregon and 288 properties in Washington during 1959. Several other Trogoderma species reported during the 1959 surveys were Trogoderma inclusum) in South Dakota; T. parabile in Wyoming and Oregon; and T. simplex and T. inclusum in Oregon. DERMESTID populations were considered normal for the year in Nevada and khapra beetle surveys were reported negative.

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was probably the most abundant insect in grain elevators in Kansas during 1959 and was one of the two most abundant species in stored corn and wheat in Nebraska. This pest was also reported as being one of the three most important pests of grain in Idaho. In addition to being reported as troublesome in Virginia, saw-toothed grain beetle was reported as a pest in New Mexico, South Dakota, Texas, Nevada, Washington, Oregon, Oklahoma, Montana, Ohio and Maryland.

FLAT GRAIN BEETLE (Cryptolestes pusillus) was one of the two most abundant species in stored wheat and corn in Nebraska and one of the three most important pests of stored grains in Idaho. Flat grain beetle was also recorded as a pest in Kansas, Oklahoma, Texas and Oregon.

CONFUSED FLOUR BEETLE (Tribolium confusum) was recorded as light to heavy in stored grain throughout New Mexico and was one of the main pests of stored grain in Texas. This species was one of the most common species present in Oklahoma and was reported infesting many homes in South Dakota. Infestations were common in Montana and were recorded in Oregon and Nevada. RED FLOUR BEETLE (Tribolium castaneum) was one of the three most important pests of grain in Idaho and was common in Montana. In addition, red flour beetle was recorded in Kansas, South Dakota, Nevada, Oregon and Washington.

DEPRESSED FLOUR BEETLE (Palorus subdepressus) was conspicuous in grain dust accumulations from ventilator covers of an elevator at Maumee, Ohio, in September; apparently the first record for the State.

Occasional outbreaks of a GRAIN BEETLE (Ahasverus advena) occurred in Pennsylvania, particularly in moldy grain, and heavy infestations of a LONG-HEADED FLOUR BEETLE (Latheticus oryzae) damaged stored milo at Las Cruces, Dona Ana County, New Mexico. CIGARETTE BEETLE (Lasioderma serricorne) was numerous in cereals and spices in Maryland and DRUG-STORE BEETLE (Stegobium paniceum) infested foods stored in homes in Ohio.

GRANARY WEEVIL (Sitophilus granarius) infestations in corn and grain were about normal in Maryland and common in Montana. This species was also reported from Washington and Oregon. RICE WEEVIL (Sitophilus oryza) was common in stored grain in southern New Mexico and was troublesome in stored grain and cereal products in Virginia. Rice weevil was also one of the major pests of stored grain in Texas and Louisiana during 1959.

CADELLE (Tenebroides mauritanicus) was one of the most common pests of stored grain in Oklahoma and was common in Oregon. RUSTY GRAIN BEETLE (Cryptolestes ferrugineus) was recorded during 1959 in Washington, but there were fewer infestations than during the 1957-58 season due to increased use of controls. This situation was also true of other stored-grain insects in Washington.

LESSER GRAIN BORER (Rhyzopertha dominica) was abundant in Kansas, being the most abundant of the weevils, and was widespread in all types of grain. Heavy infestations were found in stored milo at Las Cruces, New Mexico, and infestations were found in grain establishments in Ontario, Monroe, Harrisburg and Tillamock, Oregon. The records in Oregon were new. This pest was also a major problem in stored grain in Texas.

COWPEA WEEVIL (Callosobruchus maculatus) was reported as a household pest in Oregon and BEAN WEEVIL (Acanthoscelides obtectus) was abundant in stored, dry beans in the Auburn area of Maine during May. Bean weevil was also a household pest in Oregon. The records as household pests in Oregon for these two weevils are unusual. PEA WEEVIL (Bruchus pisorum) was a problem in Washington. Two processors report an increase in Federal Grade weevil dockage in dry edible seed peas from the Palouse region during the last four years; dockage averaged about 0.25 percent in 1957, 1.5 in 1959 (up 2.5 percent for some growers).

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) populations in Illinois were most severe in the southern one-sixth of the State, averaging less than 10 percent of kernel infestations in stored ear corn in that area. However, a fall survey of 7 cribs of 1959 ear corn averaged 1.6 percent kernel infestation. The great majority, if not all of this infestation, occurred prior to harvest. This is a higher-than-average level of infestation for newly harvested corn in that area of southern Illinois. Angoumois grain moth populations were heavy again in Maryland and it was considered to be the number one pest of stored corn and small grains in that State. This pest was also a problem, to some extent, in corn and grain sorghum storage in eastern Kansas and was considered a major pest of stored grain in Texas as well as being troublesome in Virginia.

INDIAN-MEAL MOTH (*Plodia interpunctella*) was above normal in stored grain during 1959 in Pennsylvania and more requests than usual were received concerning infestations in homes in that State. Indian-meal moth was abundant in flat and elevator storage in Kansas during September and October and was a major pest of stored grain in Texas. Infestations of this pest were numerous in homes in Maryland and Ohio and was common in stored grains in Oregon. Infestations were considered normal in Nevada. MEDITERRANEAN FLOUR MOTH (*Anagasta kuhniella*) was a problem in stored feed in several areas of New Mexico and was common in stored grain and grain products in Oregon.

Two MITES were found infesting stored products in Oregon. They were *Glycyphagus domesticus* in Merion bluegrass during May and other stored products during the rest of the year and GRAIN MITE (*Acarus siro*)in stored grain and other stored products.

MEAL MOTH (*Pyralis farinalis*) was conspicuous in grain dust accumulations from ventilator covers of an elevator at Maumee, Ohio, in September, and PSOCIDS were a problem in elevator storage in Kansas.

RED-LEGGED HAM BEETLE (*Necrobia rufipes*) and LARDER BEETLE (*Dermestes lardarius*) were troublesome in stored meat in Virginia.

A TOBACCO MOTH (*Ephestia* sp., prob. *elutella*) was present in stored alfalfa pellets in New Castle County, Delaware, causing slight injury during mid-March.

INTERCEPTIONS OF SPECIAL INTEREST AT U. S. PORTS OF ENTRY

(1959 records unless otherwise indicated)

KHAPRA BEETLE (*Trogoderma granarium*) 11 times, at Baltimore (1) in ship's stores, Charleston (3) in crude guar gum cargo from India, Cleveland, Ohio (1), in soybean meal in quarters, Houston, Texas (1), Mobile, Alabama (1), New Orleans, Louisiana (1), Portland, Oregon (1), Philadelphia, Pennsylvania (1), and New York, New York (1), in ship's stores from various orgins; larvae of ORIENTAL FRUIT FLY (*Dacus doraslis* Hend.) (including 2 interceptions of possibly that species) in papaya, guava and coffee berry in baggage at Honolulu, Hawaii, destined for the mainland; larvae of MEDITERRANEAN FRUIT FLY (*Ceratitis capitata* (Wied.)) 18 times, at Boston, Massachusetts (4) in fruits in baggage and mail from the Azores, Honolulu, Hawaii (7), in baggage destined for the mainland, Miami, Florida (3), in fruit in airplane stores from Portugal and in baggage from Brazil, New York, New York (2), in baggage from Italy, San Juan, Puerto Rico (1), in airplane stores from Spain and Washington Inspection House, Washington, D. C. (1), in air express from Java for first record from Indonesia; WHITE GARDEN SNAIL (*Theba pisana* (Mull.)) 11 times, at Charleston, South Carolina (6), with military cargo from Morocco and New Orleans, Louisiana (2), and Norfolk, Virginia (3), with military cargo from France and Morocco; larva and pupa of a TEPHRITID (not *Anastrepha*, *Ceratitis* or *Dacus*) in orange carried by a passenger at Laredo, Texas, on September 5; larva of MEXICAN FRUIT FLY (*Anastrepha ludens*) in orange in baggage destined for California on September 27 at El Paso, Texas; larvae of a PHYCITID (*Cryptoblabes gnidiella* (Mill.)) in peaches in stores from Italy on August 22 at New York, New York; larvae of a WEEVIL (*Rhysommatus* sp.) (possibly of significance to pigeon peas) in *Cajanus bicolor* pods in baggage from Panama on March 8 at Brownsville, Texas; four interceptions of a CURCULIONID (*Euscepes postfasciatus* (Fairm.)) with each of vanda flowers, red ginger flowers, peanuts and pineapple at Honolulu, Hawaii, in baggage and mail destined for the mainland; and a ROOT KNOT NEMATODE (*Meloidogyne* sp.) (an unusual perineal pattern, possibly undescribed species) on *Kaempferia roscoeana* plants in cargo from Singapore on October 30 at San Francisco, California. (Plant Quarantine Division, November 30, 1959).

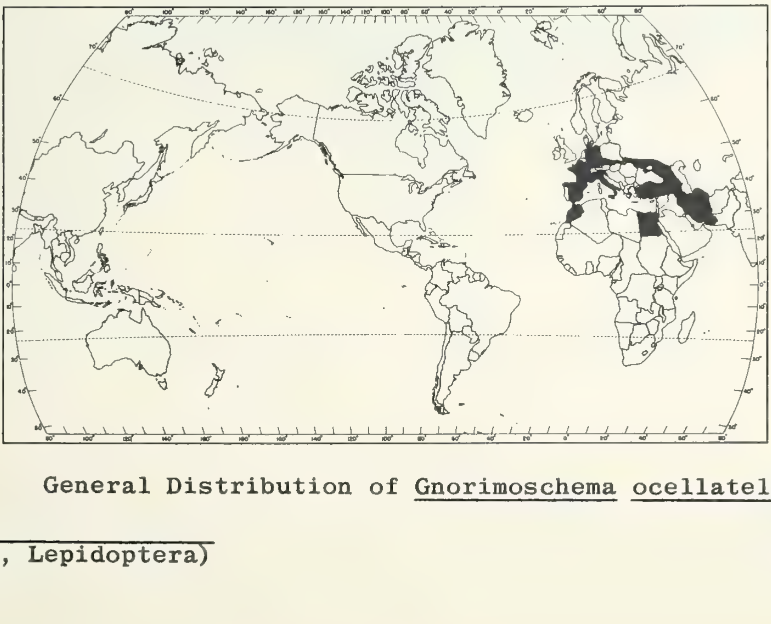
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

A SUGAR-BEET CROWN BORER (Gnorimoschema ocellatella (Boyd))

Economic Importance: This gelechiid is a very important pest of beets in several areas of Europe, North Africa and the Middle East. Damage is most evident from July to October, when the late generations are more prevalent. During certain outbreak years, up to 100 percent of the crop will be infested. As many as 20-25 larvae per plant have been recorded in Italy. The larvae cause extensive leaf damage as well as considerable damage to the roots. Larval galleries can be found running 3 to 4 centimeters deep into the roots. The inner leaves of the leaves of the plant are destroyed and the weight and sugar content of the roots are greatly reduced. Damage in many instances continues after the crop has been harvested. Larval webbing promotes mold growth and causes concern only in periodic outbreak years. Meteorological factors and parasites seem to be the limiting factors in population development.

Damage to Beet

Distribution: Recorded in the literature from France, Germany, Italy, Czechoslovakia, Spain, USSR (southern UKSSR, Moldavia, Caucasus, Crimea), Turkey, Iran, United Arab Republic (Egypt) and Morocco. The species is reported to occur throughout all of Europe, but research in Germany indicates that a similar species, P. atriplicella, may replace this species in the more northerly areas.



General Distribution of Gnorimoschema ocellatella

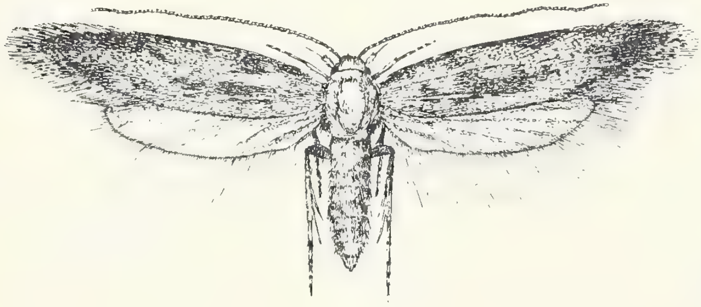
(Gelechiidae, Lepidoptera)

No. 108 of Series

Hosts: Beets (*Beta cicla*, *B. vulgaris maritima*, *B. sacchariera*).

Life History and Habits: The biology of the pest as recorded in Italy is as follows: The adults first appear during early May and fly about quickly in search of young plants to deposit their eggs. Larvae, upon hatching, begin feeding on the succulent growth, excavating galleries in the midribs, leaf stalks and the roots. Often, a black, rotting mass is clearly visible on the infested plants due to mold development on the excreta, feeding residue and foreign bodies which are trapped in the silk threads spun by the larvae. Pupation takes place in silken cocoons, which may be rolled-up in the ends of the outer leaves, in chambers made from the central leaves which are tied together, or in feeding galleries. Duration of the life cycle, as well as the number of generations, varies considerably according to climatic conditions. In the northern area, the life cycle lasts 28-30 days and there are 2 generations, but in the central and southern areas, the cycle is completed in 20-23 days and 3-4 generations develop. The various generations overlap, however, and adults, larvae and pupae can be found together in August, September and October.

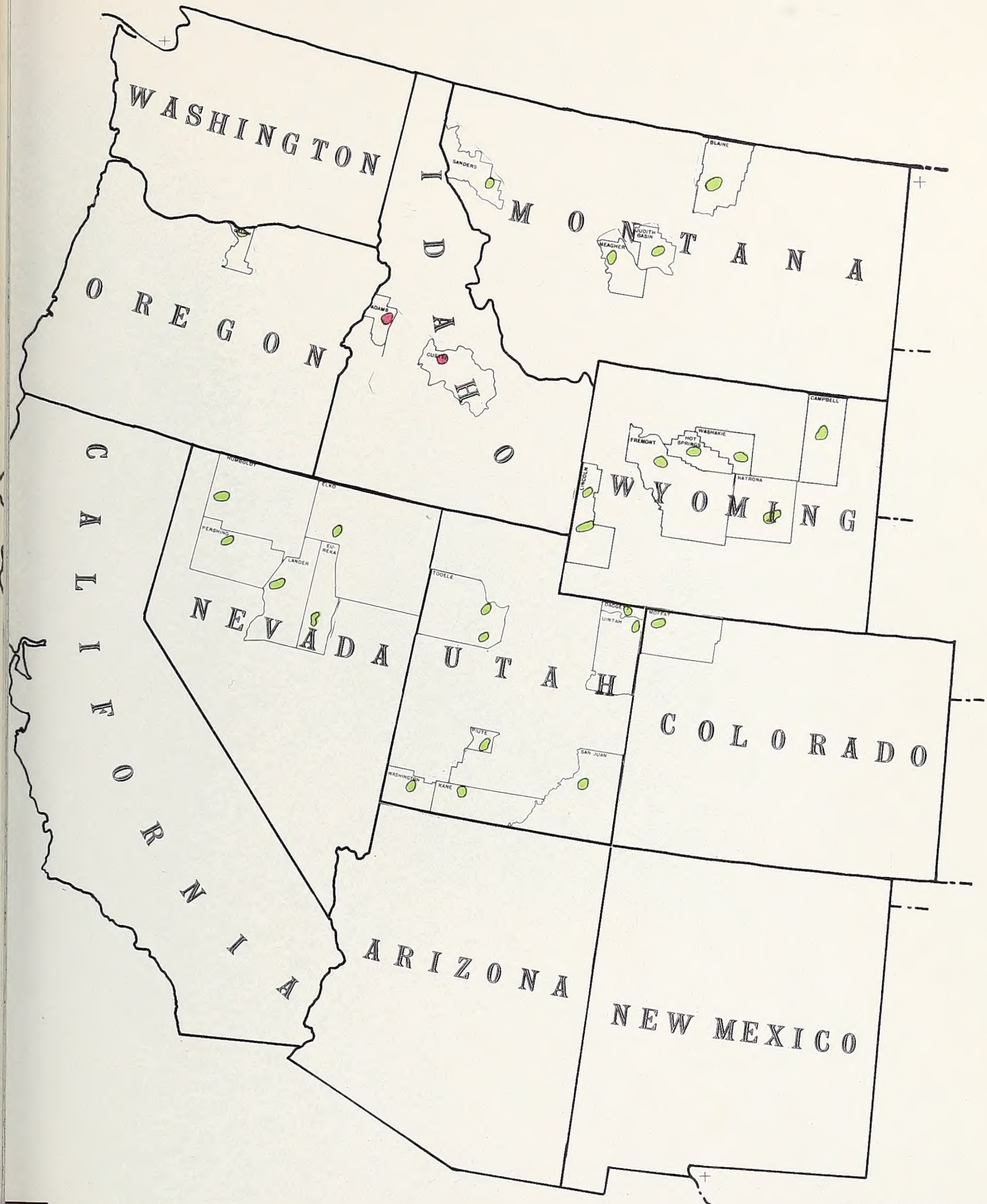
Description: ADULT - Body about 5 mm. long; wing expanse 13-14 mm. Forewings basically gray-brown or gray pale-yellow with small black, more or less distinct, spots surrounded by a light ring. Hind wings gray pale-yellow, with fringe of hairs a little lighter in color. Antennae with a series of yellowish-gray scales around the base and with another series of brown or black scales situated near the extremity. LARVA - Young larvae are more or less light green, changing color as they mature. The changes are as follows: The dorsal region becomes reddish and some rosy longitudinal lines are more or less distinctly expressed, while the ventral region takes on a straw-yellow color. The head, prothoracic segment and last abdominal segment are dorsally darkened. Length of mature larvae is 10-12 mm. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies and the U. S. National Museum). CEIR 10(7):2-12-60



Adult of *Gnorimoschema ocellatella*

Major reference and figures (except map): Adult and damage from Menozzi, Carlo, 1947. Animali e Vegetali Danannosi Alla Barbabietola da Zucchero e Mezzi per Combatterli, pp. 49-54, Genova.

MORMON CRICKET ADULT SURVEY ——— FALL 1959



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